

PROJECT facts

U.S. DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

Natural Gas
Infrastructure Reliability

02/2002

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PRIMARY PROJECT PARTNER

Colorado State University

Fort Collins, CO

PROJECT DURATION

36 Months

COST SHARING

DOE \$500,000

Non-DOE \$1,200,000

SCNG WEBSITE

www.netl.doe.gov/scng



IMPROVEMENT TO PIPELINE COMPRESSOR ENGINE RELIABILITY THROUGH RETROFIT MICRO-PILOT IGNITION SYSTEM

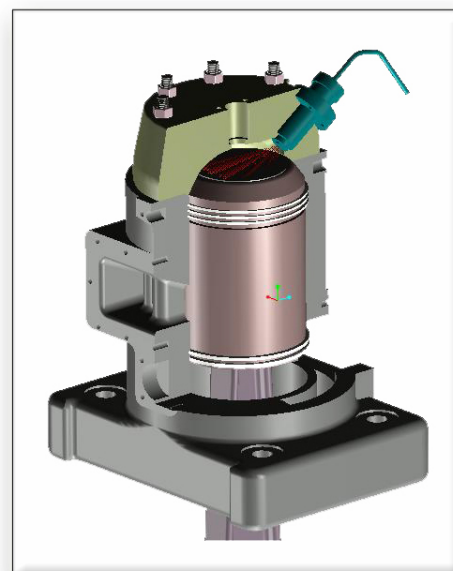
Description

This project will develop a highly reliable, high-efficiency, micro-pilot ignition system suitable for retrofitting to existing compressor engines. About 8,000 reciprocating engines with a capacity of 7 gigawatts currently compress natural gas in the nation's natural gas infrastructure. Most are 20 to 50 year-old gas engines that are slow speed, large bore, and have a low compression ratio and low brake-mean-effective-pressure (bmep). They are inefficient and not as environmentally clean as newer engines, but it would cost billions of dollars to replace this machinery.

A number of engine manufacturers have researched and developed dual-fuel gas engines that use a small quantity of diesel fuel as the pilot ignition source, while still using natural gas as the primary engine fuel. The Engines and Energy Conversion Laboratory (EECL) at Colorado State University will further develop this micro-pilot (less than 1 percent) technology for two-stroke compressor engines.

The three-year project should lead to commercialization of the micro-pilot retrofit technology as well as substantial benefits in terms of reduced emissions and improved efficiency. The capability of the concept will be demonstrated with a laboratory prototype at the end of the first year. The concept will be developed for field testing at the end of the second year. By the end of the third year, the field test will be complete and the product will be introduced to the U.S. natural gas infrastructure industry.

Colorado State University will work in partnership with the Woodward Governor Company.



IMPROVEMENT TO PIPELINE COMPRESSOR ENGINE RELIABILITY THROUGH RETROFIT MICRO-PILOT IGNITION SYSTEM

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Goal

The goal of this project is to help modernize the nation's natural gas delivery system. It responds to the Secretary of Energy's message of May 2001: "By 2020, Americans will be consuming 50 percent more natural gas than today. We will need newer, cleaner, and safer pipes to move these larger quantities of natural gas." The project responds to the Natural Gas Infrastructure Reliability Program goal: to foster the technologies needed to ensure the integrity, operational reliability, and efficiency of the nation's natural gas infrastructure as it adapts to rapidly changing natural gas markets.